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AD NUMBER

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AUTHORITY

NAVSEA ltr dtd 1 Apr 1968

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DEFENSE DOCUMENTATION CENTER

FOR

SCIENTIFIC AND TECHNICAL INFORMATION

CAMERON STATION ALEXANDRIA, VIRGINIA

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DCD DIR 5200.10



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COPY NO. 3

INTERIM DEVELOPMENT REPORT

FOR

TELEVISION TARGET TRACKING DEVICE, SUBMARINE

This report covers the period of November 1st to December 1st, 1952.

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SKIATRON ELECTRONICS & TELEVISION CORPORATION
30 East 10th Street
New York 3, New York

NAVY DEPARTMENT

BUREAU OF SHIPS

ELECTRONICS DIVISION

Contract N0bsr-57359

INDEX No. 020632

Dec. 10, 1952.

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TELEVISION TARGET TRACKING DEVICE, SUBMARINE

ABSTRACT

Work is in progress under Contract NObsr-57359 on the development of a dark-trace storage system for television images. Activity has been completed to the point where a mechanical model is being tested and completion of final mechanical and electrical design is under way. The AN/UXA-5 camera chain is now being used for test purposes. Video Quantizing and "contour level" circuits are described, and test photos of resultant effects are included in this report. A nearly complete schematic diagram is also included.

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TELEVISION TARGET TRACKING DEVICE, SUBMARINE

REPORT #5

INTERIM ENGINEERING REPORT

for

TELEVISION TARGET TRACKING DEVICE, SUBMARINE

PART I.

A. PURPOSE

The purpose of work under Contract NObsr-57359 (Index NE-020632) is the development of an electronic device for the visual presentation of stored television images. One application of the proposed unit will be the detection of motion by comparison of television images of a specific area taken from time to time with pictures of the same area previously stored. The present investigation calls for the use of the dark-trace or Skiatron tube for the storage function.

B. GENERAL FACTUAL DATA

1. Identification of Personnel

The following personnel have been assigned to this project and have expended the indicated time for the period ending December 1, 1952:

	<u>Hours</u> <u>Nov. 1 - Dec. 1</u>
a. William J. Shanahan Chief Electronics Engineer	92½
b. Max Kerman Electronics Engineer, Intermediate	142½

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TELEVISION TARGET TRACKING DEVICE, SUBMARINE

Hours
Nov. 1 - Dec. 1

c. Samuel Jacobs Electronics Engineer, Development	157½
d. Francis Rebhun Electronics Engineer, Development	150
e. Richard Vetter Electronics Engineer, Junior	3
f. Benedict Palumbo, Technician	141
g. Louis Wozniak, Designer	110

2. Patents

Patent information concerning the previous work done by Skiatron on related subjects is covered in Report No. 1, dated August 10, 1952, and there has been no patentable activity during the present report period.

C. DETAILED FACTUAL DATA

Work up to December 1, 1952, has been directed toward the completion of the final model of the subject equipment and finalization of all circuits for switching remote control, writing, erasing, etc. Construction is in progress and is expected to be completed during the month of December, 1952. All of the individual circuits have been tested on previous units and only final testing of the unit to be shipped will remain at that time. The entire main chassis of the preliminary unit has been completely rewired and additional bracketry to support high voltage supply, high voltage relays, stepping switches, clamping and other components whose

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TELEVISION TARGET TRACKING DEVICE, SUBMARINE

location is critical have been made. Front panel engraving has been completed, a blower has been installed, and most of the mechanical work is either under way or has already been completed.

1. Quantizing and Contour Circuits

There has been only little change in circuit characteristics except for minor details regarding rearrangement of electrical and mechanical functions, etc. For this reason a nearly complete schematic is available and is included with this Progress Report. One additional circuit, however, has been built and tested. This circuit employs the output from the video quantization circuits described earlier, and by means of suitable differentiation and pulse forming circuit converts the three-level presentation into a "contour" presentation where each of the levels of selected video intelligence is outlined by a ring of dark signal.

It has been found that this mode of presentation is particularly suitable for operation with relatively stable targets with good contrast, since small changes in the picture can be made readily apparent. A three-position switch on the front panel will select either normal video, quantized video or contour signal. Included in this report, in Figures 2 and 3, is a series of photographs of the effect of video contour and quantizing signals when displayed on a conventional cathode-ray tube. The difference between the original scene and the other two means of representation is quite striking.

It will be noted, in the "contour video" picture, that both edges of each quantized area are shown with the same polarity.

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TELEVISION TARGET TRACKING DEVICE, SUBMARINE

This results from the use of two pulse generating coils, whose output is mixed in the video circuitry. If simple differentiating circuits were used, alternate edges of quantized area would be of opposite polarity.

2. Project Schedule

The proposed schedule of work on the subject contract is shown in Figure 1. Approximately 85% of the work has been completed to date. The only difficulties which have manifested themselves in the construction of the unit have been the slow delivery of a number of components which are expected shortly. It is expected, therefore, that the entire unit will be completed according to the original schedule during the month of December except for any minor delays which may be introduced by this slow delivery.

Final testing will take place during the month of January and it is expected at the conclusion of these tests, during the middle of January, that a representative of the Bureau of Ships will observe a demonstration of the equipment in the laboratories. During this time, also, it is expected that finalization of the instruction book and microfilming of the drawings employed in the construction of the unit will be taken on and completed. The instruction book will therefore be ready in early February 1953. Total costs to December 1st were \$34,113.63.

D. CONCLUSIONS

Work to date has been concentrated on the construction of the final unit for shipment. All circuit layout has been completed

TELEVISION TARGET TRACKING DEVICE, SUBMARINE

and construction is under way. Final details of the electronic portions of the unit are being cleaned up and a number of mechanical features are being added.

PART II.

Program for the Next Interval

Work presently under way on equipment construction will continue with the aim of completion of the equipment during the middle of the next report period with final testing to occur during the end of December and the early part of January.



William J. Shanahan

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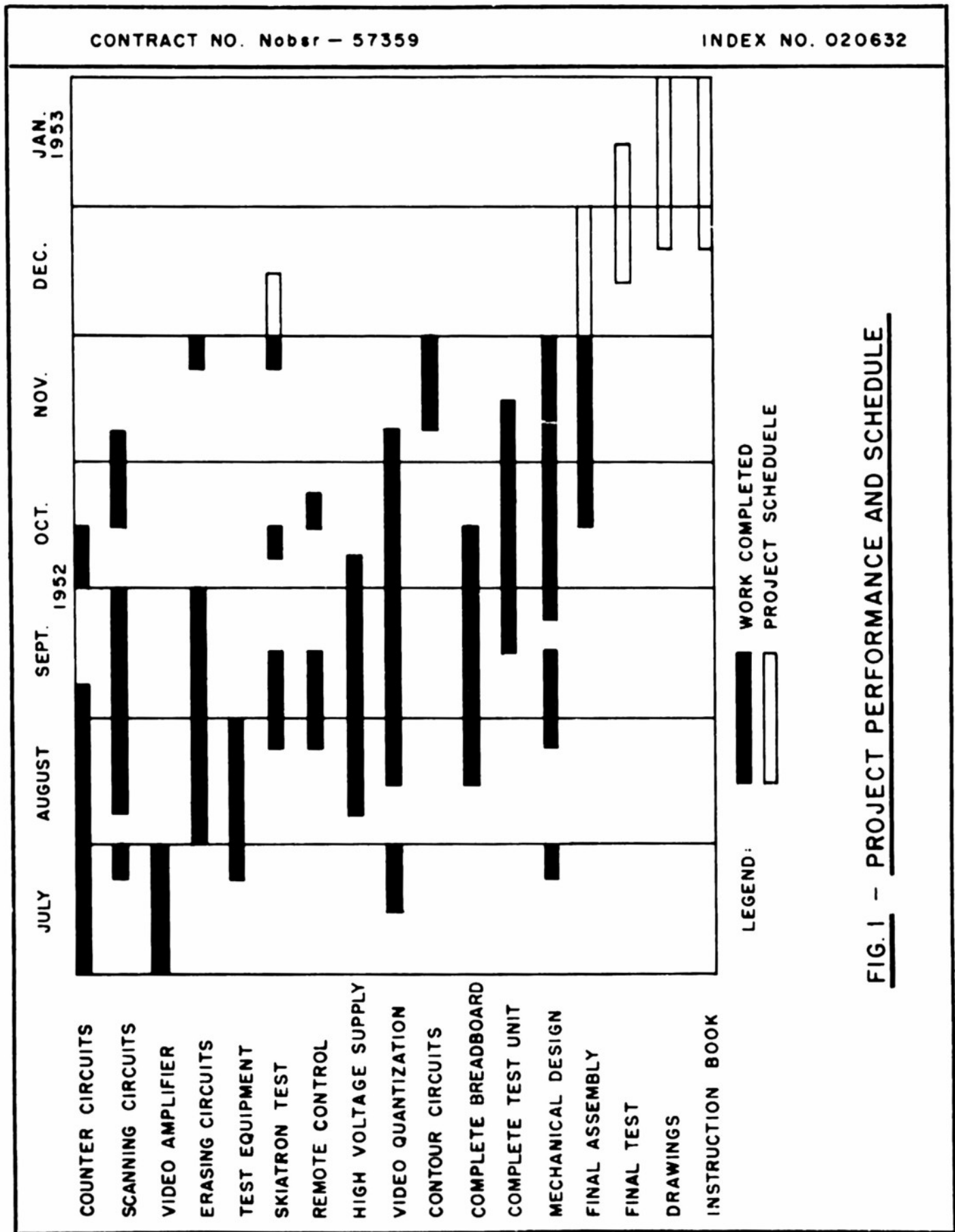


FIG. 1 - PROJECT PERFORMANCE AND SCHEDULE

CONTRACT NO. NObsr - 57359

INDEX NO. 020632



ORIGINAL SCENE



ONE-LEVEL QUANTIZATION



TWO-LEVEL QUANTIZATION



CONTOUR VIDEO
PRESENTATION

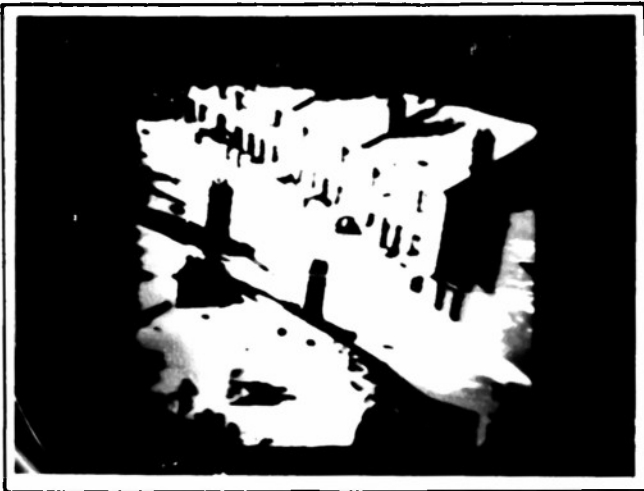
FIG.2 QUANTIZED VIDEO

CONTRACT NO. NObsr - 57359

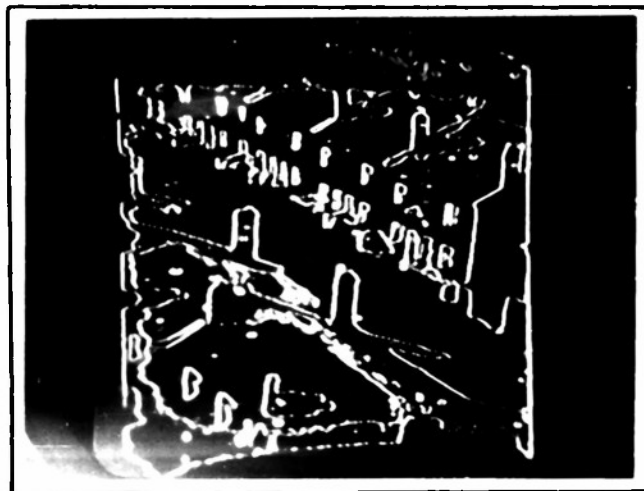
INDEX NO. 020632



ORIGINAL SCENE



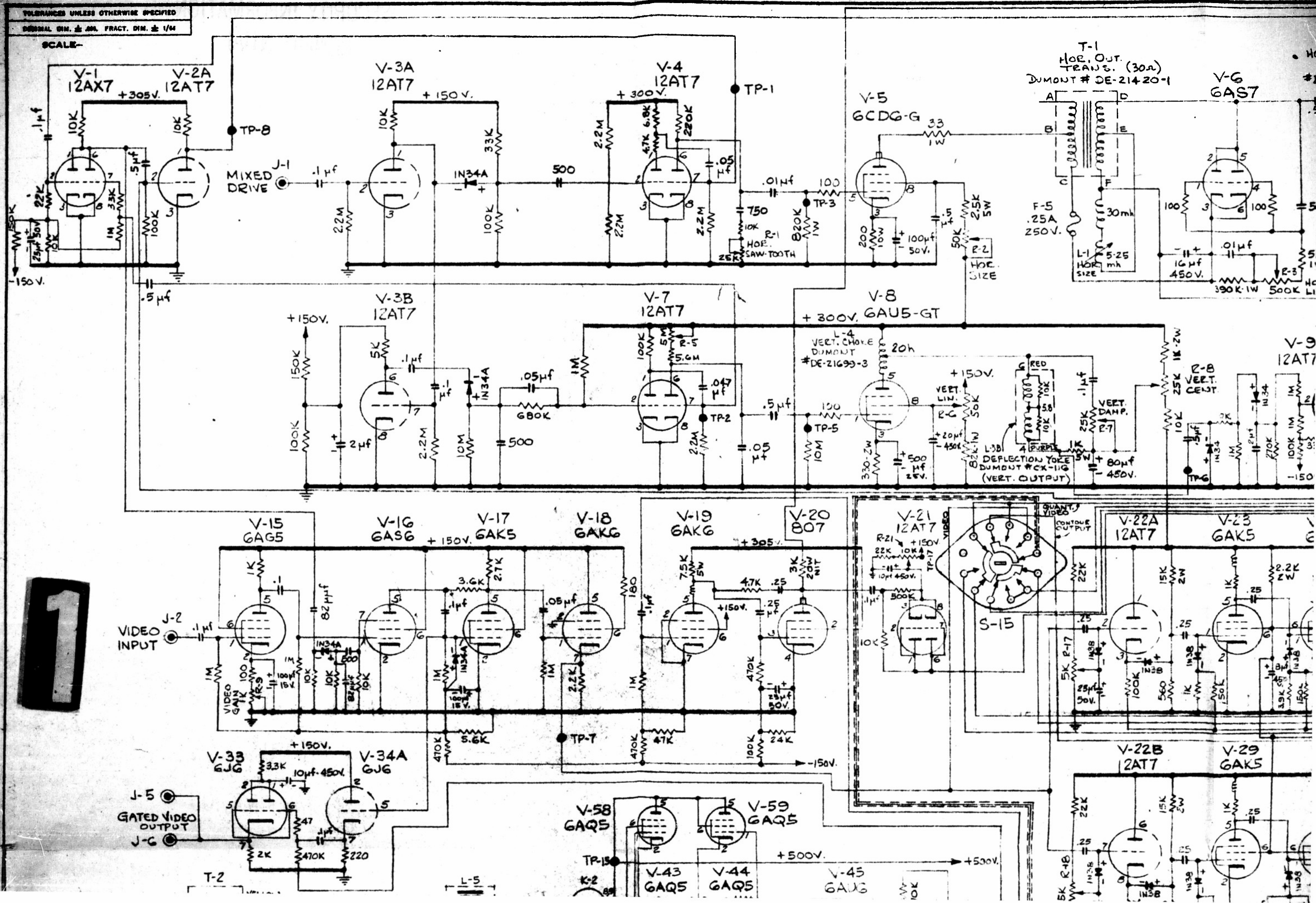
TWO-LEVEL QUANTIZATION

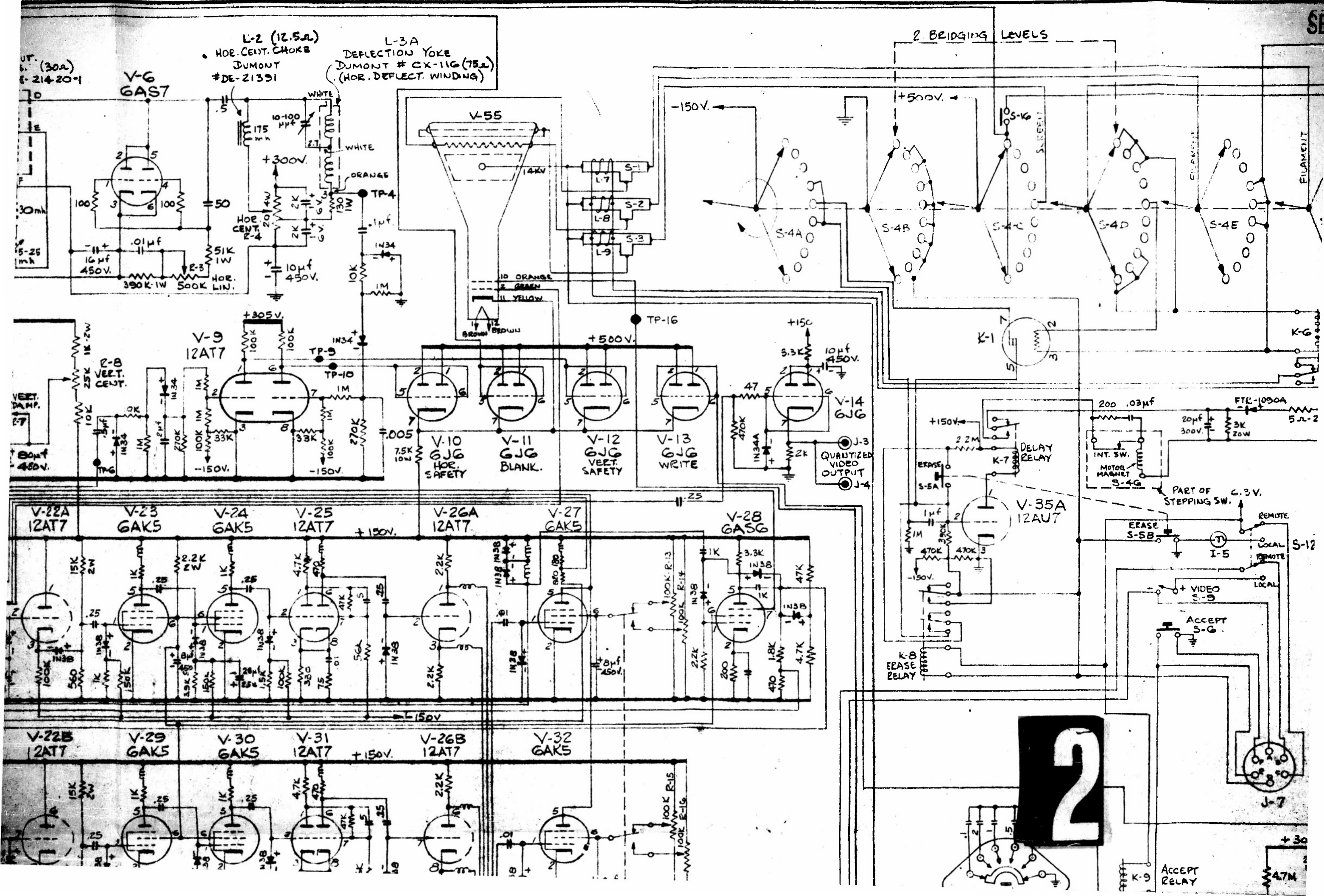


CONTOUR VIDEO
PRESENTATION

FIG.3 QUANTIZED VIDEO

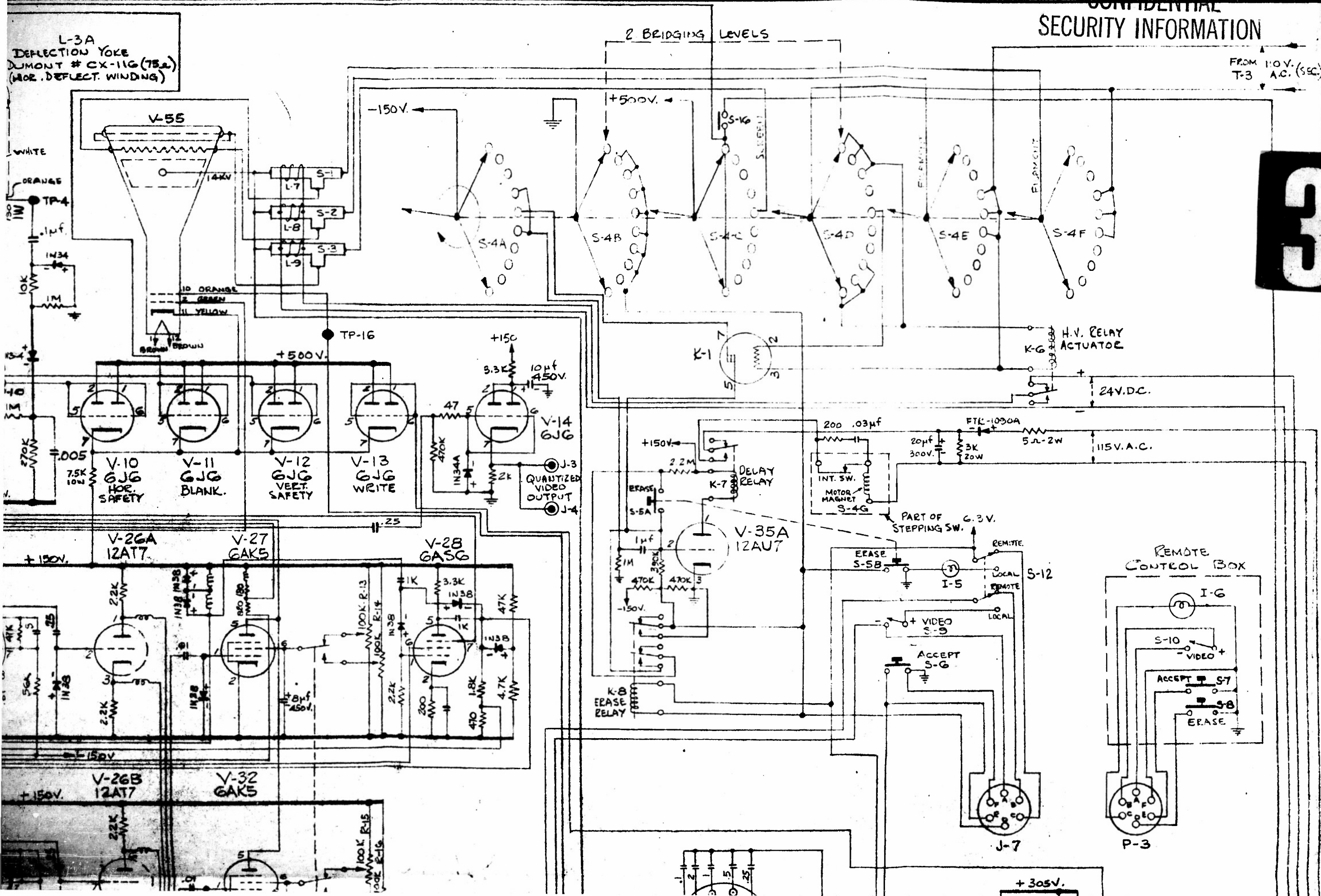
SCALE-





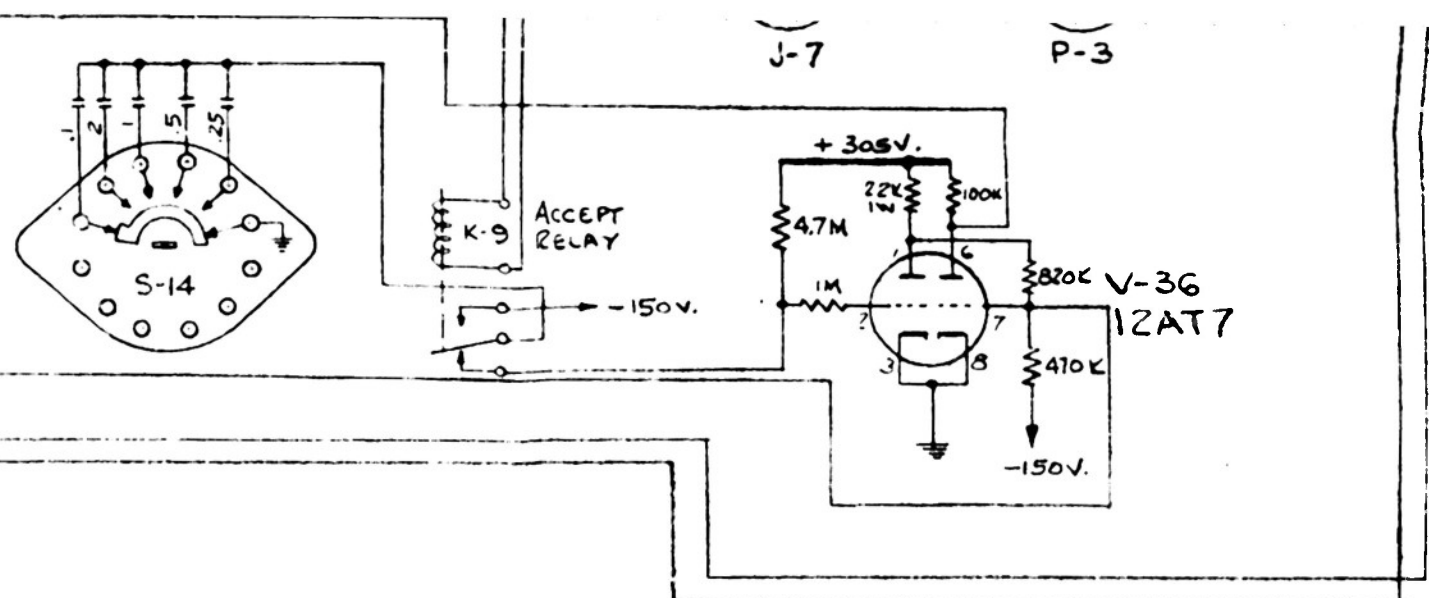
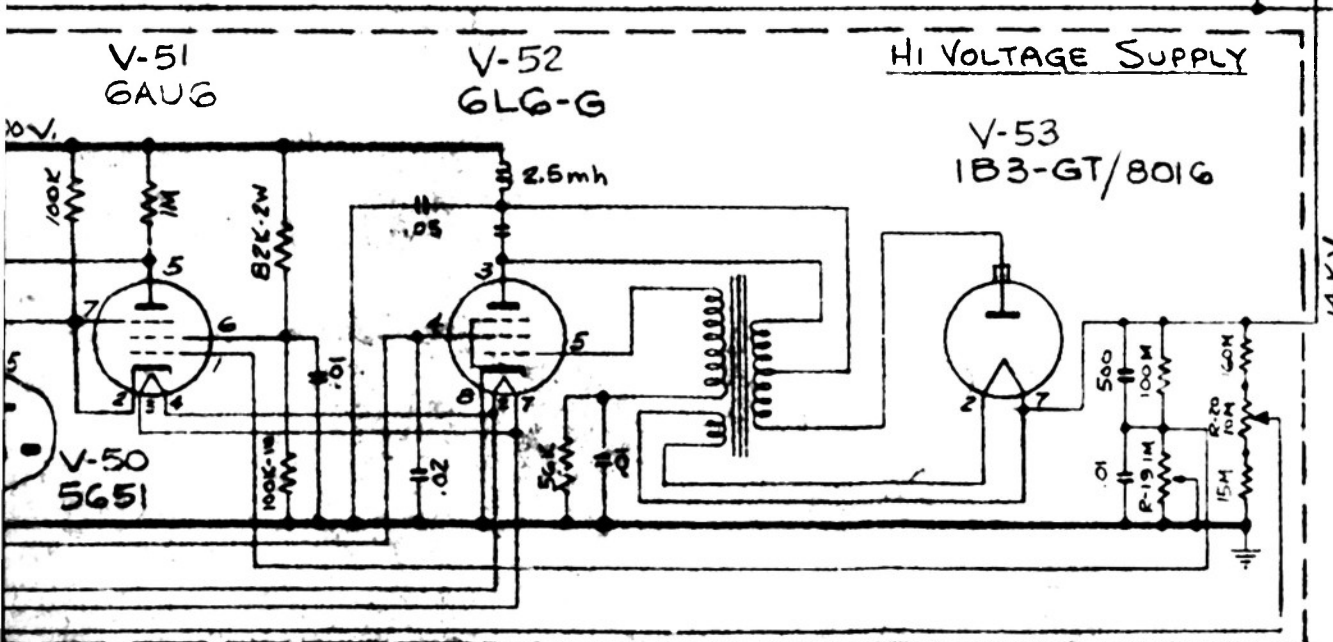
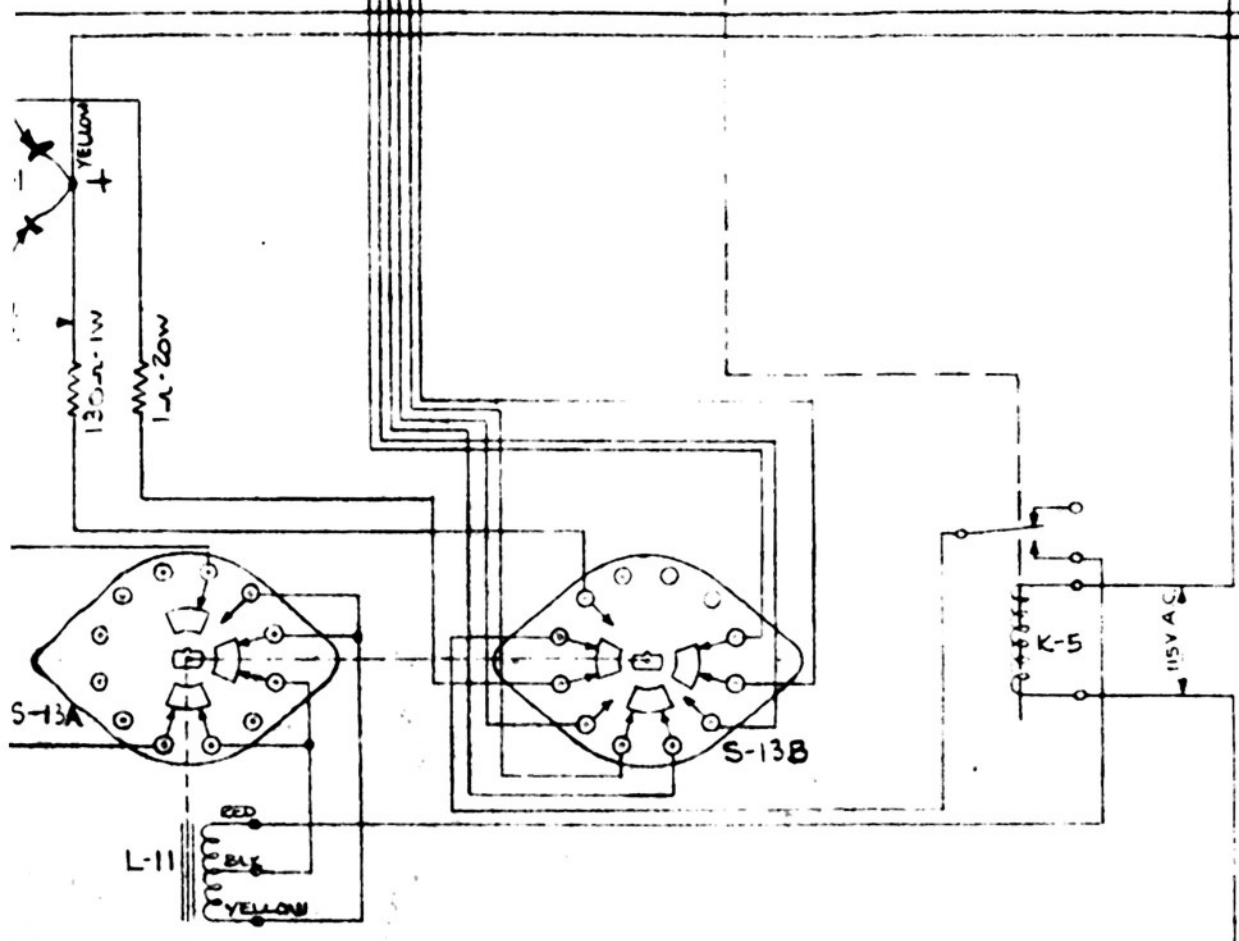
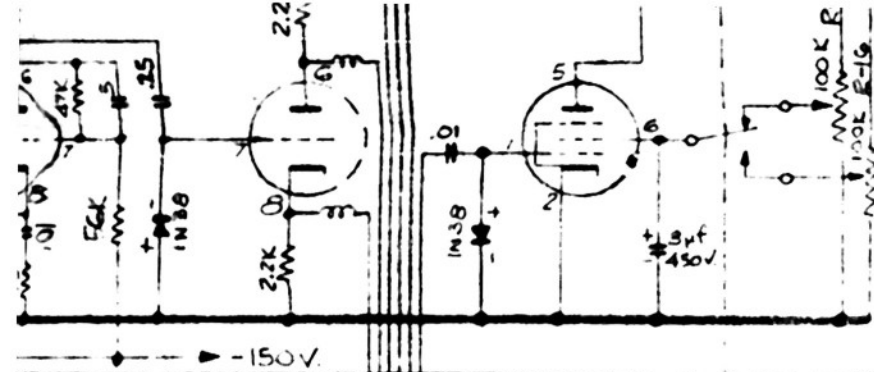
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REVISION	DATE	APP'VD.
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FIG. 4

CXK	115		
MODEL NO.	PROJECT	ASS'Y. NO.	DATE
USED ON			
SKIATRON ELECTRONICS & TELEVISION CORP. 30 EAST 10 STREET NEW YORK, N. Y.			
TITLE: SCHEMATIC			
MAT'L.		FINISH	
DRAWN: Low Work		DRAWING NO.	
APP'D.			SK-1113-D